CONTENTS

NUMBER 1

SPECIAL ISSUE: ENERGY FOR RURAL AND ISLAND COMMUNITIES V

J. Todd and J. Twidell	1	Preface
Photovoltaic Power C. R. Lloyd and S. Tukana	3	Photovoltaics as renewable energy resources on remote Pacific Islands
<u>Wind Power</u> P. J. Edwards	9	Wind energy resource studies in New Zealand
Biomass and Biofuels R. E. H. Sims	15	Growing, harvesting and marketing coppice eucalyptus trees for fuelwood
R. J. Davies	21	Bio energy: a case study of Kelp Industries, King Island, Tasmania
S. B. Prasad	25	Electricity and heat cogeneration from biomass fuels: a case study in Fiji
R. E. H. Sims	31	Tallow esters and vegetable oils as alternative diesel fuels—a review of the New Zealand programme
Integrated Energy Technologies N. Wardrop	37	The "French Island Lodge" commercial hybrid power supply system
G. Cramer	43	Autonomous electrical power supply systems—wind/ photovoltaic/diesel/battery
T. B. Tregaskis	49	The Victorian study on stand alone power supply systems (SAPS)
J. W. Twidell, K. Woodbridge, D. Barbour, A. Stepek and I. Robertson	55	A solar/wind heated house and a small island community, Orkney, Scotland
W. Grainger	63	Wind and solar data for sizing small wind turbine and photovoltaic power plants
Planning and Audits V. Hoon	67	Women's role in energy usage in rural areas
		iii

Contents

G. D. Gafiye	73	Energy developments at the Appropriate Technology Development Institute, Papua New Guinea
Y. Bronicki and B. Doron	79	Small and very small self contained power plants for isolated communities
A. E. Wheldon	83	Energy in Swaziland: options for increased self-reliance at individual and national level
S. Joseph and R. Burton	89	Small is usable: lessons from alternative energy projects
R. Alit	93	Barriers and incentives: experience of small scale developments

NUMBER 2/3

Articles G. Stavrakakis, G. Kapsiotis and	97	Digital parameter-adaptive control for a solar
M. Santamouris		concentrator
M. R. I. Ramadan and M. M. Elsherbiny	107	Potential barriers and Hall mobility of polycrystalline silicon
D. A. Kouremenos, K. A. Antonopoulos and E. Rogdakis	111	Hour-by-hour simulation of solar H ₂ O-LiBr absorption heat transformers in Athens
A. Al-Karaghouli, A. W. Al-Kayssi and A. M. Hasson	119	The photometric properties of different colored plastic mulches used for soil solarization
A. Zein, A. Lallemand and M. Lallemand	125	Phase-change heat transfer in flat-plate solar collectors
AEH. M. Khair-El-Din	131	Energy conservation and its implication for architectural design and town planning in the hot-arid areas of Saudi Arabia and the Gulf States
B. E. Al-Sagir and A. M. Hasson	139	A procedure for minimizing the photovoltaic pumping system in irrigation and leaching applications in the Baghdad area
M. Adel Hamdy and D. E. Osborn	147	The potential for increasing the efficiency of solar cells in hybrid photovoltaic/thermal concentrating systems by using beam splitting
J. O. Ojosu and R. I. Salawu	155	A survey of wind energy potential in Nigeria
I. Vrsalović	169	Senj wind power plant
H. D. Kambezidis, D. N. Asimakopoulos and C. G. Helmis	177	Wake measurements behind a horizontal-axis 50 kW wind turbine
N. Ghrab-Morcos	185	Wall thermal designs adapted to unconditioned Tunisian dwellings
V. H. Morcos	197	Investigation of a latent heat thermal energy storage

system

Contents

I. Chand and P. K. Bhargava	203	Studies on design and performance of a non- conventional system of natural ventilation in buildings
A. A. Al-Baali, M. A. Al-Abbasi, A. A. J. Al-Douri, M. F. Alias and S. I. Salih	213	Use of passive heat transfer and fluorescence to improve performance of photovoltaic solar panels
S. S. Nandwani	219	Economic analysis of domestic solar still in the climate of Costa Rica
A. Anani, Z. Jibrill and F. Abu-Allan	229	Standardized charts for cost-benefit analysis of biogas systems: case study in Jordan
N. M. Nahar and J. P. Gupta	237	Effect of dust on transmittance of glazing materials for solar collectors under arid zone conditions of India
Data Bank		
QUZ. Chaudhary	245	A procedure to obtain global solar radiation maps from sunshine duration for Pakistan
G. M. Abdul Aziz	255	Estimation of hourly clear-sky solar radiation for P.D.R. Yemen
M. A. Alsaad	261	Characteristic distribution of global solar radiation for Amman, Jordan
M. A. Alsaad	267	Solar radiation map for Jordan
I. A. Raja and J. W. Twidell	277	Distribution of diffuse and direct insolation over Pakistan
E. Taşdemiroğlu and F. Arinç	293	Comparison of the available solar radiation on flat- plate and concentrating solar collectors in Turkey
S. Coppolino	299	A very simple model for computing global solar radiation
A. Soler	305	Monthly specific Rietveld's correlations
W. E. Alnaser and H. S. Almudiafa	309	Calculation of the global, diffused, and direct solar radiation in Bahrain
C. A. Balaras	313	Realistic estimates of the beam radiation from global radiation measurements through an enhanced model for Athens, Greece
Technical Notes		
S. M. Hasnain and B. M. Gibbs	321	Prospects for harnessing renewable energy sources in Pakistan
A. Bairi	327	Method of quick determination of the angle of slope and the orientation of solar collectors without a sun tracking system
M. A. Hassab and O. A. El-Masry	331	Effects of edges on solar energy collection in small solar ponds
C. Armenta, J. Doria and M. C. de Andres	337	Characterization of high capacity accumulators for multipurpose uses in photovoltaic power plants and small applications
E. Taşdemiroğlu and M. Awad	341	Mathematical methods for the optimization of solar collector area in a solar heating system
Calendar of Events	347	

NUMBER 4

Articles C. I. Ezekwe	349	Thermal performance of heat pipe solar energy systems
A. M. Al-Turki and M. M. Elsayed	355	Comparison of the solar-operated two-stage and single-stage LiBr-H ₂ O absorption cycles
I. A. Tag and M. A. Hassab	367	Performance of solar ponds with wind suppressors
B. S. Negi, T. C. Kandpal and S. S. Mathur	379	Designs and performance characteristics of a linear Fresnel reflector solar concentrator with a flat vertical absorber
M. A. Eben Saleh	393	Impact of thermal insulation location on buildings in hot dry climates
M. A. Eben Saleh	407	Adobe as a thermal regulating material
F. M. Butera	417	The technological transplant
S. R. Connors, J. G. McGowan and J. F. Manwell	423	Wind/diesel village-scale electric power systems: the performance and economic analysis of a simulated village system
A. H. Zahed and M. D. Bashir	441	A case study of a solar energy transfer and storage system in a freeze desalination project in Yanbu, Saudi Arabia
G. Rizzi and V. K. Sharma	447	An inexpensive solar collector-storage system for space heating—I. Design methodologies
Jna. Gavaldà, J. Massons and F. Díaz	457	Experimental study on a self-adapting Darrieus-Savonius wind machine
D. M. Kammen and W. F. Lankford	463	Comparative study of box-type solar cookers in Nicaragua
Data Bank M. A. Alsaad	473	The applicability of hourly solar radiation models to Amman, Jordan
A. M. Hasson, N. I. Al-Hamadani and A. A. Al-Karaghouli	481	Comparison between measured and calculated diurnal variations of wind speeds in northeast Baghdad
S. Coppolino	489	Validation of a very simple model for computing global solar radiation in the European, African, Asian and North American areas
Technical Note		
A. A. Al-Baali, S. Al-Juboory, N. Al-Hamdani and M. Al-Riahi	495	Distribution of dust particles with wind direction in Baghdad
Amendment	497	
Calendar of Events	499	

NUMBER 5

Articles L. A. Frulla, H. Grossi Gallegos,	501	Analysis of satellite-measured insolation in Brazil
D. A. Gagliardini and G. Atienza	301	Analysis of sateline-measured insolation in Brazil
A. M. Aushana and S. M. Aliwi	511	n-CdTe polycrystalline photoelectrode prepared by direct reaction of tellurium and Cd-substrate
M. Hasnaoui, Z. Zrikem, P. Vasseur and E. Bilgen	515	Solar radiation induced natural convection in enclosures with conducting walls
L. R. Lugo, C. E. Barrera and A. I. Reyes	527	Methodology for preliminary evaluation of the eolian potential case—Mexico
<u>Data Bank</u> F. J. K. Ideriah	531	On the calculation of solar radiation in dust-free atmospheres in Ibadan
W. E. Alnaser and N. S. Awadalla	537	Empirical model to estimate the global radiation in Bahrain by the knowledge of some astronomical parameters
T. Feuillard and JM. Abillon	541	Estimation of hourly insolation in Guadeloupe
A. Soler	545	The dependence of the distribution of the monthly average hourly diffuse radiation on the values of the daily sunshine fraction
S. Coppolino	549	A new model for estimating diffuse solar radiation in Italy from clearness index and minimum air mass
M. Hussain and D. Siddique	555	On correlating the relative sunshine duration with the state of the sky
N. Messen	559	The iso-radiation map for Algeria
J. O. Ojosu	563	The iso-radiation map for Nigeria
Technical Notes F. Lasnier and S. Sivoththaman	577	Prediction of a photovoltaic system performance using cumulative frequency curves of radiation
M. Santamouris, I. Tselepidaki and N. Dris	585	Evaluation of models to predict solar radiation on tilted surfaces for the Mediterranean region
S. O. Enibe	591	Solid absorbent dispersion in an inert fluid for solar refrigeration applications
I. T. Al-Alawy	597	Wind and other factor requirements to solar energy applications in Iraq
M. A. Al-Abbasi, A. J. Abdul Ghani, O. F. Naoum and A. AK. Hussain	601	Improving the performance of a liquid solar collector
R. Sh. Habib and H. Sh. Habib	607	Design of discrete control system for a solar heating model
F. M. Al-Naima and N. A. Yaghobian	611	Design and construction of a solar tracking system
A. J. Varkey	619	Photovoltaic effect of chemically deposited Cu ₂ S/C-Si heterojunctions
Calendar of Events	623	

NUMBER 6

J. O. Ojosu and R. I. Salawu An evaluation of wind energy potential as a power 663 generation source in Nigeria Numerical study of laminar natural convection in R. Ben Yedder, Z.-G. Du 675 and E. Bilgen composite Trombe wall systems Performance of a solar driven compound NH₃/ 685 D. A. Kouremenos, H,O-H,O/LiBr absorption refrigeration system in K. A. Antonopoulos and E. Rogdakis Athens Coil-coating paints for solar collector panels-I. B. Orel, Z. Crnjak Orel. 699 M. Bosanac and A. Krainer Characterization and performance tests Data Bank I. Foyo-Moreno, Y. Castro-Diez, Verification of two models to predict global radiation 707 F. J. Olmo and J. I. Jimenez on a horizontal surface **Technical Notes** Coil-coating paints for solar collector panels-II. B. Orel, Z. Crnjak Orel, 713 R. Jerman and I. Radoczy FT-IR spectroscopic investigations Effect of shadow on the load matching of dc motors A. K. Sharma, R. Dwivedi 719 and S. K. Srivastava with solar cell array An appraisal of the performance of a 10.5 kW SAPVS W. Wolde-Ghiorgis 725 at a village in Ethiopia An electronic circuit to facilitate PV regulators to be F. Lasnier and S. Sivoththaman 735 used in PV-hybrid systems Determination of optimum tilt angle of single and M. Mahmoud and I. Nabhan 739 multi rows of photovoltaic arrays for selected sites in Jordan Erratum 747 Calendar of Events 749 Volume Contents and Author Index for Volume 7,

